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Module 13

Stormwater Quantity Requirements and Minimum Standard 19



The Evolution of MS-19

Regulatory Drivers:

- Erosion & Sediment Control (ESC) Regulations
- Stormwater Management (SWM) Regulations (Part IIC)
- SWM Law
- SWM Regulations (Part IIB)

MS-19

“Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion, and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff . . . “

SWM Regulations (Part IIB): Quantity Control

Meet the new boss . . .

. . . Same as the old boss?

9VAC25-870-66. Water Quantity.

Channel Protection.

Channel protection and flood protection minimum standards are established pursuant to the requirements of subdivision 7 of § 62.1-44.15:28 of the Code of Virginia.

Primary Regulatory Driver: SWM Law

§ 62.1-44.15:28 A.10

Require that VSMPs:

- **Replicate**, as nearly as practicable, existing predevelopment runoff characteristics and site hydrology, or
- **Improve upon** contributing share of predevelopment stream channel erosion or localized flooding

STORMWATER MANAGEMENT



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WATER QUALITY



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Natural Streams are in equilibrium with their watershed

- Greater imperviousness = greater runoff
- Issue: How will the change in the drainage area affect a given channel?

STREAM CHANNEL EROSION



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MS-19

Natural

- Erosion: 2-yr
- Capacity: 2 yr

Man-made

- Erosion: 2-yr
- Capacity: 10-yr

Restored

- Exempt

OR
1% RULE

870-66

Channel Protection

Natural

EB

Man-made

EB
or
2-yr

Restored

EB
or
Design

-----TO LIMITS OF ANALYSIS-----

No Flooding:

Demonstrate:

- No 10-yr flooding pre
- No 10-yr flooding post (detention/improvements)

---TO LIMITS OF ANALYSIS---

Local Flooding:

Must eliminate flooding by:

- on-site detention
- system improvements
- Combination

---TO LIMITS OF ANALYSIS---

OR

- Detention of 10-year peak flow to less than existing

--NO LIMITS OF ANALYSIS (POST)--

MS-19 still applies, in parts:

9VAC25-840-40.19.d.

- Applicant must provide evidence of permission to make improvements.

MS-19 still applies, in parts:

9VAC25-840-40.19.e.

- All hydrologic analyses must be based on existing watershed characteristics and ultimate development condition.

MS-19 still applies, in parts:

9VAC25-840-40.19.f.

- Maintenance plan for stormwater detention options required
 - Must be approved by VESCP authority
 - Include maintenance requirements of facility and person responsible

MS-19 still applies, in parts:

9VAC25-840-40.19.g.

- energy dissipaters shall be placed at the outfall of all detention facilities as necessary

MS-19 still applies, in parts:

9VAC25-840-40.19.h.

- All on-site channels must be verified to be adequate.

MS-19 still applies, in parts:

9VAC25-840-40.19.j.

- Developments consisting of individual lots or parcels must be considered as a whole
 - Residential, commercial, or industrial
 - Hydrologic parameters in engineering calculations must reflect ultimate development condition

MS-19 still applies, in parts:

9VAC25-840-40.19.k.

- Measures used to protect properties and waterways must be employed to **minimize impacts** on physical, chemical, and biological integrity of rivers, streams and other waters of the state.

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Adequate channel?

- Velocity
- Volume
- Duration (Time of Concentration)
- Frequency

Note: need to check onsite channels as well

Urban Stream Problems

- Impervious surfaces result in increased volume, velocity, frequency, and peak rates of flow
- Detention practices address:
 - **velocity and peak flow rates**
 - but not volume, frequency, and duration

Before...

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Working with the Landscape...

Better site design

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Design Principles:

- Utilize existing vegetation & topography
- Limit and disconnect impervious surfaces
- Encourage infiltration where appropriate

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9VAC25-840-40.19.c. supplanted
by 9VAC25-870-66

Channel Protection (Man-made channels)

Flood Protection (all)

- Compliance by:
 - Detention of stormwater or
 - Downstream improvements may be incorporated in approved LDA,
 - at discretion of plan approving authority.

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SWM Regulations 9VAC25-870-97:

“Downstream properties shall be protected ...”

- Compliance with MS-19
- 1-year extended detention
- Localities may adopt more stringent criteria

9VAC25-840-40.19. m. & n.

After 7/1/2014:

9VAC25-870-66

(unless grandfathered)

9VAC25-870-66 satisfies MS19